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PORELLA. L. Sp. Pl. 2:1106. 1753.

By Wm. C. Barbour.

One of the first hepatics to be found by one who is beginning the study of the group is a dull brownish-green mass, usually growing at or near the foot of a tree, on the bark. It was the first hepatic species to be identified by the present writer, and in the packets sent to him for identification by Chapter members and readers of the BRYOLOGIST, it figures prominently and often. This species is *Porella platyphylla*. Like Frullania the leaves are incubous and deeply bilobed, the lower lobe (lobule) being smaller than the upper. In Northeastern America there are five genera whose leaves answer to this general description, viz.: Frullania, Jubula, Lejeunea, Radula and Porella. Of these, Frullania and Lejeunea can be readily distinguished from Porella by their smaller size. Again, the lobule in Porella is ligulate, while in Frullania and Jubula it is usually inflated, in Lejeunea it is simply incurved, and in Radula it is subquadrate or nearly rotund.

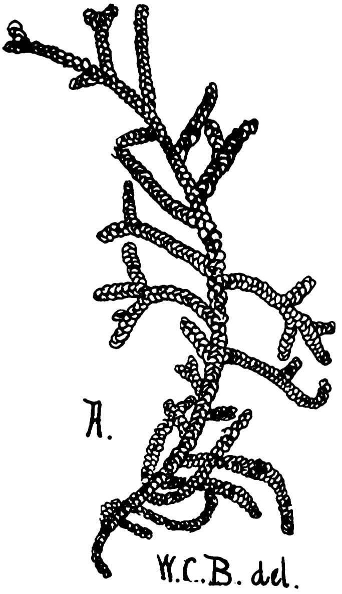

Fig. 1. *A. Porella platyphylla* (L.) Lindb. Plant × 1½.

The plants are large, dark-green to yellowish-brown, mostly 2–3 pinnate; root hairs few, these at base of the underleaves. Lobes very deeply two-parted, the dorsal large, orbicular-ovate, and in most species entire. Ventral lobes are much smaller, sometimes nearly separate from the dorsal, varying in different species from ovate or oblong to lanceolate. Underleaves large, entire or dentate, sometimes long decurrent at the sides. The male inflorescence is in the form of spherical antheridia in the axils of densely imbricate leaves, which form short spikes or branches having somewhat the appearance of a pine cone. They are very readily recognized with the naked eye, and are noticeably abundant in some species, as, for example, *P. navicularis*.

The perianth is oval to obovate, flattened dorso-ventrally at the mouth, which is ciliate, dentate or sometimes nearly entire.

The following key to the species is taken from Dr. M. A. Howe's Monograph, "The North American Species of the Genus Porella." Bull. Torr. Club. **24:** 517, 1897, by the kind permission of the author.

KEY TO THE SPECIES.

Stems subsimple or somewhat fasciculately branching, short, tumid; underleaves caudate-lacinulate at base....................8. P. Bolanderi.

Stems more or less regularly 1-3 pinnate.

Ventral lobes lingulate-oblong to linear-oblong, often somewhat falcate. closely appressed to stem or to dorsal lobes.

Dorsal lobes and underleaves entire, length of ventral lobes $\frac{1}{3}$–$\frac{2}{5}$ the width of the dorsal...... ....1. P. pinnata.

Dorsal lobes entire, underleaves ciliate dentate at base, length of ventral lobes $\frac{1}{2}$–$\frac{2}{3}$ the width of the dorsal.......2. P. Swartziana.

Leaves and underleaves repand-dentate..........3. P. Wataugensis.

Ventral lobes broadly ovate to oblong.

Usually glossy.

Ventral lobes more or less spurred outwardly at base, mostly linguiform or ovate-oblong, margins plane or lightly recurved...7. P. Roellii.

Ventral lobes regularly rounded outwardly at base, ovate, margin recurved..............................6. P. navicularis

Usually dull.

Rather flaccid, dorsal lobes subimbricate, ventral lobes long decurrent, underleaves distant..................4. P. rivularis.

Somewhat rigid, dorsal lobes rather densely imbricate, ventral lobe scarcely decurrent, underleaves approximate or subimbricate........... ....5. P. platyphylla.

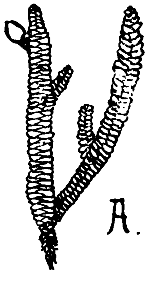

Fig. 2. *A. Porella Bolanderi* (Aust.) Pears. Plant with perianth, × 1.

The capsule is nearly or quite spherical, on a short stem, yellowish brown, opening by four irregular valves. The spores are more or less echinulate and the elaters 1-3, usually 2 spiral. The general appearance of the plants is shown in figures 1 and 2, and perianths in figures 2 and 5. Antheridial branches are shown at G. in figure 5.

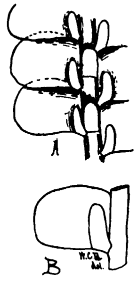

Fig. 3. *Porella pinnata* L.
A, Underside of stem, showing ventral lobes and underleaves.
B, Leaf with ventral lobe.

1. PORELLA PINNATA L. (*Madotheca porella* Nees.) Fig. 3. Usually dark green (sometimes yellowish-green), dull, somewhat flaccid. Stems 2-3 pinnate, and loosely matted together. Leaves distant or slightly imbricate, curled or rolled in drying; ventral lobes small, closely appressed, lingulate oblong, margins plane or nearly so, length $\frac{1}{3}$–$\frac{2}{5}$ the width of the dorsal lobe. Underleaves subquadrate, distant, scarcely decurrent, nearly same width as stem, sometimes broader, margins plane and entire. Perianth obovate-pyriform, crenulate at mouth.

At base and on exposed roots of trees subject to inundation, throughout eastern North America. Usually sterile.

2. PORELLA SWARTZIANA (Web.) Trevis. (*Madotheca Swartziana* Lindenb.) Sordid green, dull; procumbent, irregularly pinnate, 3–5cm. long; branches mostly short. Leaves subimbricate, dorsal lobes ovate, entire or a little wavy, lower margin decurved: ventral lobes linear-oblong, erect or nearly so, margins plane, obtuse, nearly or quite entire, bearing 1–3 cilia at base on inner margin, length $\frac{1}{2}$–$\frac{2}{3}$ the width of the dorsal. Underleaves oblong, rarely exceeding stem in width, obtuse or truncate, margins plane, entire above, ciliate-dentate at base, slightly decurrent. Collected in low ravines at Opelousas, Louisiana, by Rev. A. B. Langlois (No. 228 and in part No. 229). Type specimen is supposed to have been collected in Jamaica.

3. PORELLA WATAUGENSIS (Sulliv.) Underw. (*Madotheca Wataugensis* Sulliv.) Similar to *Porella pinnata*, but differs in being smaller and more delicate, and in the leaves, both dorsal and ventral lobes being subrepand-denticulate. Collected by Sullivant on decayed logs on bank of the Watauga River in North Carolina. The only collection known.

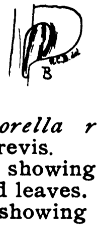

Fig. 4. *Porella rivularis* (Nees.) Trevis.
A. Stem, showing underleaves and leaves.
B, Leaf, showing ventral lobe.

4. PORELLA RIVULARIS (Nees.) TREVIS. Fig. 4. (*Madotheca rivularis* Nees. *Porella dentata* Lindb.). Dull, dark green, flaccid; irregularly pinnate, 3–10cm. long, prostrate or ascending, forming rather loose mats; dorsal lobes of leaves subimbricate, obliquely ovate, with rounded obtuse apex, entire or slightly denticulate, flat or nearly so; ventral lobes are small, obliquely ovate, length $\frac{1}{3}$–$\frac{2}{5}$ width of the dorsal, half as broad as are the underleaves, the outer margin being mostly broadly revolute giving it a twisted appearance, *long decurrent*, usually dentate or ciliate at the inner base; underleaves distant, nearly or quite orbicular, usually about twice the width of the stem, apex rounded, margins undulate, very

long decurrent, the wing sometimes longer than the free portion, and usually sharply dentate. Perianth ovate, the lips subentire, and usually plane. On moist rocks, and base of trees in deep woods. Common on the Pacific Coast, but rare in the East. Has been collected in Connecticut, Ohio, Texas, New Mexico, Montana and Idaho. Our illustration does not show the decurrent wings of the underleaves.

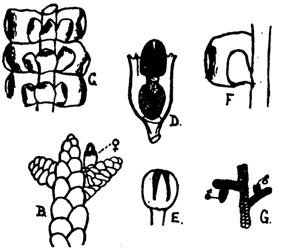

Fig. 5. *Porella platyphylla* (L.) Lindb.
B, Stem, upper side, showing perianth and emerging capsule.
C, Stem. under side, showing ventral lobes and underleaves.
(The leaves are shown *too far apart*. They should be more closely imbricated.)
D, Section of perianth lengthwise.
E. Capsule:
F, Leaf, showing lower lobe.
G, Part of plant, showing male branches.

5. PORELLA PLATYPHYLLA (L.) Lindb. Fig. 5. (*Jungermannia platyphylla* L. *J. platyphylloidea* Schwein. *Madotheca platyphylla* Dumort. *Porella thuja* Lindb.) Dull or with a slight lustre, yellowish to dark green, rigid; 1–3 pinnate, 3–8cm. long, in dense mats; dorsal lobes of leaves closely imbricate, usually appressed, obliquely-ovate, obtuse, upper margin subentire; ventral lobes ovate to oblong, obtuse, length about $\frac{3}{5}$ the width of the dorsal, margins recurved, scarcely decurrent; underleaves close together, nearly orbicular to oblong, margins reflexed, long decurrent: perianth oval, narrowed above, the mouth dentate or ciliate. At base of trees and sometimes on logs and rocks. Very common east of the Mississippi, and has been collected in Idaho, Wyoming and British Columbia. The American plants are mostly of the form known as *Porella thuja*, though the European form, *P. platyphylla*, is also found.

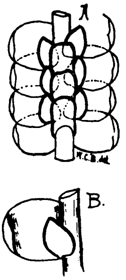

Fig. 6. *Porella navicularis* (Lehm. and Lindenb) Lindb.
A, Underside showing leaves and underleaves.
B, Leaf, showing dorsal lobe.

6. PORELLA NAVICULARIS (L. and L.) Lindb. Fig. 6. (*Madotheca navicularis* Nees.) Glossy, brownish or yellowish-green, large; stems bipinnate, procumbent in mats or subpendulous; dorsal lobes *densely imbricate*, closely wrapped about the stem when dry, giving the dried plant something of a cord-like appearance, apex recurved; ventral lobes ovate, obtuse or rarely acute, margins entire and decidedly recurved, length about ½ the width of the dorsal lobe, sometimes a little more than half; underleaves imbricate, quadrate-oblong, margins entire, recurved, long decurrent; perianth broadly obovate, lips denticulate to crenulate-dentate becoming

nearly entire with age, strongly revolute, giving it a truncate appearance. Spores bright yellow-green. On trunks and branches of trees on the Pacific Coast as far north as Alaska.

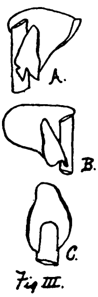

Fig. 7. *Porella Roellii* Stephanii.
A, Underside of leaves.
B, Ventral lobe.
C, Lobule.

7. PORELLA ROELLII Stephani. Fig. 7. Green or yellow-brown, glossy; procumbent, flaccid, caespitose, subdichotomous, the primary branches simply and distantly pinnate; dorsal lobes desnsely imbricate, appressed, ovate, apex narrowed, subtruncate; ventral lobes ovate or linguiform, much narrowed toward the apex, about half as wide as the underleaves, length $\frac{3}{5}$ the width of the dorsal, margins plane, spurred at the base, especially on the outer angle; underleaves close together, ovate-linguiform, obtuse and rounded at the apex; perianth large, obovate, truncate, with dentate mouth.

Under shelving rocks and on cliffs, along the Pacific Coast. The species is closely related to the European *Porella laevigata*, and sterile plants may be confused unless care be taken.

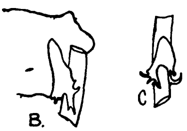

Fig. 8. *Porella Bolanderi* (Austin.) Pearson.
B, Part of leaf, showing ventral lobe.
C, Underleaf.

8. PORELLA BOLANDERI (Austin.) Pearson. Fig. 8. (*Madotheca Bolanderi* Aust.) Dark green, dull; stems subsimple or somewhat fasciculately branched; dorsal lobes densely imbricate, ovate to oblong with obtuse apex, strongly deflexed or rolled when dried, with margin of inflated cells, upper edge repand or sometimes caudate-dentate, the base reaching beyond the stem; the ventral lobes and underleaves often so close as to conceal the stem; ventral lobes ovate-lanceolate, usually rather acute, long decurrent, nearly separate, length $\frac{2}{5}$–$\frac{3}{5}$ the width of the dorsal lobe, caudate-lacinulate on inner side at base; underleaves ovate-lingulate, wider than stem, long decurrent, wings caudate on either side near the base, undulate-repand above: perianth broadly ovate, narrowed at the mouth, which is ciliate and subtruncate.

On stones, shelving rocks, and bark of trees. California.

Sayre High School, Sayre, Pa.

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